

**IN THE CLAIMS:**

Claims 1 through 12 are pending in this application. Please further amend Claims 1, 6, 7 and 8, as follows:

1. (Currently Amended) An avalanche photodiode, comprising:  
an absorption layer absorbing light to create carriers; and  
a multiplication layer multiplying the created carriers,  
wherein  
the multiplication layer is formed of Si and the absorption layer is formed of a compound semiconductor, and wherein  
a semiconductor interface layer having a wider band-gap than that of the absorption layer is formed between the multiplication layer and the absorption layer, the semiconductor interface layer being in direct contact ~~securely-fused~~ with the multiplication layer.
2. (Original) An avalanche photodiode according to claim 1, wherein the absorption layer is formed of an InGaAs mixed crystal or InGaAlAs mixed crystal or InGaAsP mixed crystal, and the semiconductor interface layer is formed of the InGaAlAs mixed crystal or InGaAsP mixed crystal.
3. (Original) An avalanche photodiode according to claim 1, wherein the absorption layer is formed of an InGaAs mixed crystal or InGaAlAs mixed crystal or InGaAsP mixed crystal, and the semiconductor interface layer is formed of InP or GaAs.
4. (Original) An avalanche photodiode according to claim 1, wherein the absorption layer is formed of a semiconductor containing Sb.
5. (Previously Presented) An avalanche photodiode according to claim 1, wherein a junction between the multiplication layer and the semiconductor interface layer is formed by fusion.
6. (Currently Amended) An optical module mounting an avalanche photodiode, said avalanche photodiode comprises:

an absorption layer absorbing light to create carriers; and  
a multiplication layer multiplying the created carriers,  
wherein

the multiplication layer is formed of Si and the absorption layer is formed of a compound semiconductor, and wherein

a semiconductor interface layer having a wider band-gap than that of the absorption layer is formed between the multiplication layer and the absorption layer, the semiconductor interface layer being in direct contact ~~securely fused~~ with the multiplication layer.

7. (Currently Amended) An optical receiver mounting an avalanche photodiode, said avalanche photodiode comprises:

an absorption layer absorbing light to create carriers; and  
a multiplication layer multiplying the created carriers,

wherein

the multiplication layer is formed of Si and the absorption layer is formed of a compound semiconductor, and wherein

a semiconductor interface layer having a wider band-gap than that of the absorption layer is formed between the multiplication layer and the absorption layer, the semiconductor interface layer being in direct contact ~~securely fused~~ with the multiplication layer.

8. (Currently Amended) A method of manufacturing an avalanche photodiode, comprising the steps of:

forming a silicon multiplication layer on a silicon substrate;

forming, on a substrate, an absorption layer composed of a compound semiconductor and a semiconductor interface layer having a wider band-gap than that of the absorption layer; and

fusing the silicon multiplication layer directly to ~~and~~ the semiconductor interface layer.

9. (Previously Presented) The method of manufacturing an avalanche photodiode according to claim 8, wherein the absorption layer is formed of an InGaAs mixed crystal or

InGaAlAs mixed crystal or InGaAsP mixed crystal, and the semiconductor interface layer is formed of the InGaAlAs mixed crystal or InGaAsP mixed crystal.

10. (Previously Presented) The method of manufacturing an avalanche photodiode according to claim 8, wherein the absorption layer is formed of an InGaAs mixed crystal or InGaAlAs mixed crystal or InGaAsP mixed crystal, and the semiconductor interface layer is formed of InP or GaAs.
11. (Previously Presented) The method of manufacturing an avalanche photodiode according to claim 8, wherein the absorption layer is formed of a semiconductor containing Sb.
12. (Previously Presented) The method of manufacturing an avalanche photodiode according to claim 8, wherein a junction between the silicon multiplication layer and the semiconductor interface layer is formed by the fusion.